Turning the Tide
on runoff pollution
SC DHEC's Bureau of Water

Fall 2003

The UK Land Use & Water Quality Connection

By Anne Marie Johnson, S.C. DHEC

In the UK, land use is addressed through a nationally legislated planning policy ...

This past April, a South Carolina multidisciplinary team traveled to England to study the UK's model land use planning and tree protection system. One aspect of this renowned system the team investigated was how the British are making the connection between land use planning, tree protection, and water quality.

In the UK, land use is addressed through a nationally legislated planning policy that is locally implemented and enforced. Due to the high level of concern in the UK over flooding issues, planning policy guidance requires that plans and applications in areas of both existing development and future development make considerations for potential flooding. It is through this flood planning guidance that the attention of local planning authorities and developers is drawn to water quality protection issues. The following are some of the planning guidance tools that support water quality protection in the UK and are applicable to South Carolina:

- Sustainable Urban Drainage Systems (SUDS) – SUDS are environmentally sustainable stormwater management systems that replicate natural drainage. SUDS protect waterways by preventing pollution, controlling flooding, recharging groundwater, and enhancing the environment.
- Tree Protection Ordinances (TPOs) – Nationally mandated and locally implemented and enforced, individual or group TPOs ensure that trees are valued and protected in communities.

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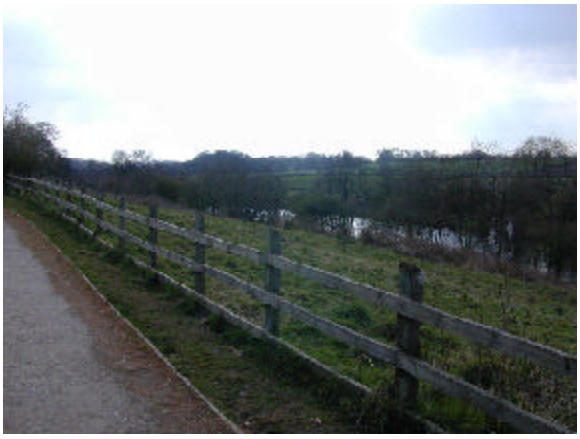

Mandatory greenspace provides amenity value and water quality protection.

Inside

In the Field

Rural Residents Get a Hand to Improve Water Quality

By Morris Warner, Clemson Cooperative Extension Service

Coneross Creek and Beaverdam Creek watershed tributaries and creeks both have levels of fecal coliform above what is considered safe and are consequently on the 303(d) list of impaired waters. The watersheds of these two creeks consist mostly of rural agricultural areas. Poultry and beef cattle production are the predominate agricultural uses.

The local County Extension office recognized the need to assist residents in getting the help they needed to improve their local water quality. The project, funded through a Section 319 grant, helps homeowners and agricultural producers apply for cost share assistance to install best management practices that will reduce the potential of fecal coliform entering the watersheds. By offering cost share, the program is hoping to encourage landowners to take a look at their own properties, practices and needs to determine what they could do to improve water quality.

One of the key factors that has made this project successful is the partnership between Clemson Extension and the Natural Resources Conservation Service. Clemson Extension handles the educational efforts, recruitment of participants and administrative aspects of the project while, Heather Stephens, NRCS district conservationist, provides technical assistance in developing farm plans and designing best management practices. Additionally, local SC DHEC officials have helped promote the project to homeowners and septic contractors.

So far, the project has been very successful. The first nine months into the two-year project, 71 percent of the funding available has already been committed.

For more information, contact Morris Warner at *mwarner@ clemson.edu.*

Construction workers finish the roof on the composting facility at Foster Poultry Farm.

Community Culture and the Environment

EPA's *Community Culture and the Environment* is now available. The Guide explores the concepts of community and culture and provides tools for identifying, assessing and working cooperatively within the social dynamics and local values connected with environmental protection.

The Guide is for people involved in community-based initiatives, including those affiliated with watershed-based organizations, universities and federal, state and local agencies.

To request a free copy call (800) 490-9198, ask for publication number EPA 842-B-01-003. Visit www.epa.gov/ecocommunity/tools/community.pdf

Watershed Minute

A 101 on the 303(d)

When talking about water quality, the term *303(d) list*, or *list of impaired waters*, is often heard. So what is this list?

Section 303(d) of the Clean Water Act mandates that every two years each state must compile a list of waters that do not meet water quality standards. In South Carolina, portions of streams, rivers, lakes and other waterways are placed on the 303(d) list when a five-year period of monitoring data indicate that the established state water quality standards are not met.

Waters can be impaired for a variety of causes including but not limited to: bacteria, phosphorus, heavy metals, etc. Sources of these impairments vary with land uses such as urban, rural or agricultural.

Once a waterway is on the 303(d) list, it is targeted for water quality improvement. Often local stakeholders are eligible for grants for improvement projects through S.C. DHEC.

South Carolina is currently preparing the 2004, 303(d) list due out in April. To see the 2002 list, please visit the web at www.scdhec.gov/water/html/tmdl.html. Also, contact your watershed manager for additional information at www.scdhec.gov/water/shed/contact.html.

By Richelle Tolton, S.C. DHEC

News to Use

Rain Gardens, a Household Way to Improve Water Quality

Rain gardens are just what they sound like: gardens that soak up rainwater, mainly from your roof, but also from you driveway and lawn. They are landscaped areas planted with wildflowers and other native vegetation to replace areas of lawn. The gardens fill with a few inches of water and allow the water to slowly filter into the ground rather than running off to stormdrains. Compared to a patch of conventional lawn, a rain garden allows about 30 percent more water to soak into the ground.

Holding back the runoff helps prevent pollutants such as fertilizers from washing off your yard into nearby streams and lakes. By reducing the amount of water that enters the local stormdrain systems, rain gardens can also reduce the chances for local flooding, as well as bank and shoreline damage where stormdrains empty into streams and lakes.

People in many parts of the country are starting to build rain gardens in their yards and promoting their use in other locations, such as neighborhood parks. You can help in your own yard by simply building one or more rain gardens to collect runoff from your roof. Rainwater can sometimes be collected from your driveway or lawn by locating a rain garden in a low spot where the water naturally drains.

For additional information on Rain Gardens see the following web sites:

- http://clean-water.uwex.edu/pubs/raingarden/gardens.pdf
- www.montgomerycountymd.gov/mc/services/dep/greenman/rain.htm
- www.ces.ncsu.edu/copubs/news/greentips/2003-05/2.html

Reprinted with permission from *Rain Gardens, A Household Way to Improve Water Quality in Your Community*, University of Wisconsin-Extension.

Getting to the Source on the Isle of Palms

By Linda L. Tucker, City Administrator, Isle of Palms

The City of Isle of Palms is involved in a cutting edge, environmentally significant project. It is looking at whether the high concentrations of fecal coliform bacteria (waste) in the drainage system and Intracoastal Waterway are the result of the leachate of malfunctioning or inadequate residential septic tank systems, or other sources.

While the city was aware of the necessity to keep the waters clean and free of fecal bacteria for swimming, fishing and shellfish gathering, the city approached the project with some trepidation. Inadequate septic systems would likely mean exploration of costly public works project such as the extension of the public sewer system.

In 2001, when the city received a S.C. DHEC/U.S. EPA 319 grant in the amount of $115,027 to assist in funding the nearly $200,000 project, scientists began by first determining which areas of the island produced water samples with high concentrations of fecal coliform bacteria. In partnership with General Engineering & Environmental, LLC (General Engineering), Phase I of the project involved collecting approximately 450 samples from 17 different points on the island to check fecal counts along with a review of historical data.

"Tracking the progress of this project has been increasingly fascinating," according to Mayor Mike Sottile. "As the data has accumulated, it has become more and more interesting to follow."

The second phase of the project involved collecting approximately 275 samples over five events at 38 locations. After determining the areas of fecal contamination, 135 samples were sent to labs for DNA analysis to determine the source of the high bacteria counts.

Interesting results came back from the labs. The majority of the fecal matter, thus far in the project, is identified as animal. The city has extended the project to collect samples during the peak tourist season when the island is the most heavily populated and when the warm temperatures would contribute to the incidence of bacteria. As the project continues, samples continue to support animal, not human, fecal contamination.

Currently, the project is approaching its final stages where the animal source is being determined by DNA results. Speculation was that those sources might be domestic pets, raccoons and/or birds. Much to the staff's and City Council's surprise, deer might be the source.

The city now refers to its problem as "The Bambi Dilemma." The city must tackle this challenge while at the same time acknowledging that the deer population made the island their home for food and forage long before the island was developed as a residential, recreational community. As the project ends, the city will be preparing for the public presentation of results and developing ideas on methods, if any, to improve the cleanliness of water.

Working towards that end, the city has imposed a new septic tank ordinance which will prohibit home buyers from expanding an existing home or building a new one without testing the septic system, improving it or connecting to the public wastewater treatment system. Also, the city prohibits live aboard vessels at its City Marina and received a grant for and maintains a boat pump out facility as part of the marina services.

The Public Works Committee of City Council continues to work to improve the drainage system by cleaning the existing system, expanding the piped network, and adding to the collection system. Finally, individual residents and visitors are encouraged to clean up after their pets. Pooper-scoopers are placed at all beach access paths and at the marina for the convenience of pet owners and to encourage compliance with the "Pooper Scooper" ordinance.

For more information on this project go to www.sourcemolecular.com/news/newsjuly2003a.htm. `

Success Marks Fourth Anniversary of OPCWA

Hundreds of Upstate cattlemen, timber operators, boaters, waterside community homeowners, and individual homeowners have shared in the Oconee-Pickens Clean Water Action program (OPCWA) during its first four years, reports Bill Ebeling, volunteer project manager.

Funded in 1999 by a grant from U.S. EPA and the S.C. DHEC, the program provides cost sharing and technical assistance to clients adopting Best Management Practices (BMPs) that improve their property and protect the waters of Lake Keowee and its feeder streams.

"The successes can be attributed largely to a cadre of more than 100 OPCWA volunteers who have collectively given more than 7,000 hours of their time to develop and implement the programs," said Ebeling.

"But the real winners are the participants and the tens of thousands of people who live on or near Lake Keowee and who depend on it for safe drinking water, recreational activities, and a wide range of other economic and lifestyle benefits."

Ebeling cited several examples of the program's successes to date:

• Timber operators are accepting the advice of consulting foresters and employing only professionally trained loggers. Erosion and siltation is being prevented by preservation of stream-side buffers, water-friendly road construction and post-harvest replanting to return the land to production more quickly.

• Cattlemen have reduced erosion and pollution by creating vegetative buffers along pasture streams, installing in-pasture watering stations, planting improved grasses and using rotational grazing to preserve land cover that prevents silt and pollutant runoff into waterways.

• People living on Lake Keowee or along its feeder tributaries are upgrading their septic systems and having them regularly inspected and serviced.

• Waterfront communities served by sewers are up-grading their systems. Keowee Key recently installed a half-million dollar constructed wetlands and solar drying facility that converts sewage to fertilizer and improves the quality of water returned to the lake well beyond mandated requirements.

"And very importantly," Ebeling stressed, "developers have become more and more aware that planning new communities in harmony with nature has considerable appeal to environmentally aware buyers."

The CWA partnership includes the U.S. Natural Resources Conservation Service, S.C. Forestry Commission, Clemson University Extension Service, and Duke Energy Co. Leadership, volunteer support, and partial funding is provided by the Friends of Lake Keowee Society.

For more information about OPCWA call 864-882-6004 or *scfolks@mindspring.com.*

Welcome Friends of Lawson's Fork Creek

The Friends of Lawson's Fork are dedicated to maintaining a natural treasure in Spartanburg County. This new South Carolina Water Watch group plans to learn more about ways to protect and improve the water quality of Lawson's Fork Creek.

The creek begins near Inman and flows 29 miles through Spartanburg County. It joins the Pacolet River east of Spartanburg.

This scenic creek receives runoff from both rural and urban sources. To help identify problems or potential problems, Friends of Lawson's Fork monitor six sites along the length of the creek.

For more information on Friends of Lawson's Fork see their home page at: www.lawsonsfork.org.

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- Special Area Classifications – Special designations can be used to protect riparian buffer areas or other biologically significant areas.
- Brownland Development – Before undeveloped land can be touched, planning laws require that 65 percent of derelict land must be "recycled" first. This reduces the large amounts of impervious pavement associated with sprawl development.
- Mandatory Greenspace Requirements – Developers are required to set aside land for greenspace. This can protect water quality as well as provide an amenity for residents.

In addition to the National Planning Policy Guidance, other water quality associated initiatives examined on this trip include:

- The Red Rose Community Forest – One of 12 in the UK, this forest not only provides social, recreational, health, educational, economic and community benefits, it also provides water quality protection and flood control through several well-designed wetlands.
- Pet Waste Ordinances – Local ordinances require pet owners to clean up after their pets in public places. Waste deposit containers are strategically located along pathways with reminders that a fine of $150 will be imposed for not following the pet waste cleanup rules.

Clearly, lessons learned from this trip to the UK are important and applicable here. The study team is now at work adapting and disseminating this information to South Carolina audiences.

For more information, contact Anne Marie Johnson at *johnsoam@dhec.sc.gov*.

Coming Events

* South Carolina Urban & Community Forestry Council's 2003 Annual Conference "Urban Tree Environments" Nov. 6 - 7, Rock Hill, SC. www.scurbanforestry.org/pages/760083/index.htm

* NALMS 2003: Protecting Our Lakes' Legacy, Nov. 5-8, Mashantucket, CT. www.nalms.org/symposia/newengland/index.htm.

* TMDL 2003, Nov. 16-18, Chicago, www.wef.org/Conferences.

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